

the depression described as number vi. under "Areas of low barometer." Near the centre of the combined depressions the pressure was about 29.5 (749.3). During the 19th and 20th the depression moved eastward, attended by increasing pressure and strong breezes to moderate gales; by the last-mentioned date it had apparently filled in and an area of barometric maxima occupied the ocean from the Banks of Newfoundland eastward to the European coasts.

8.—This was a continuation of the depression described as number viii. of "Areas of low barometer." On the 21st it was central south of Newfoundland, the pressure ranging from 29.6 (751.8) to 29.75 (755.6); the disturbance moved northeastward, and during the 22d, 23d, and 24th it occupied the region between N. 50° and 55° and W. 40° and 35°, while an area of high barometer prevailed over the ocean to the eastward of the last-mentioned meridian; moderate w. gales prevailed on the fiftieth parallel during the above dates, and by the 25th the depression had disappeared from the chart.

9.—This was a continuation of low area ix. of "Areas of low barometer." It passed over the Gulf of Saint Lawrence during the 24th, and on the following day it was to the northeastward of Newfoundland, where it probably filled in. By the 26th the area of barometric maxima, within which the barometer ranged from 30.15 (765.8) to 30.55 (776.0), covered the Atlantic from W. 50° eastward to W. 10°.

OCEAN ICE.

The positions of the icebergs observed during November, 1884, are shown on chart i. by the shaded spots.

The following reports were received:

October 30th.—S. S. "Persian Monarch," in N. 46° 29', W. 53° 24', passed two icebergs.

November 17th.—S. S. "Lord Clive," in N. 45° 56', W. 53° 38', passed a number of icebergs.

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature over the United States and Canada for the month of November, 1884, is exhibited on chart ii. by the dotted isothermal lines. In the table below are shown the mean temperatures for November, 1884, with the November normals and the departures in the several geographical districts, as deduced from the Signal Service observations.

Average temperatures for November, 1884.

Districts.	Average for Nov. Signal-Service observations.		Comparison of Nov. 1884, with the average for several years.
	For several years.	For 1884.	
New England	40.1	40.7	+0.6
Middle Atlantic states	45.8	46.4	+0.6
South Atlantic states	55.2	55.1	-0.1
Florida peninsula	67.1	66.8	-0.3
Eastern Gulf states	55.9	54.5	-1.4
Western Gulf states	56.3	56.0	-0.3
Rio Grande valley	64.4	65.0	+0.6
Tennessee	48.4	48.6	+0.2
Ohio valley	43.3	44.3	+1.0
Lower lake region	37.8	37.5	-0.3
Upper lake region	23.0	33.6	+10.6
Extreme northwest	23.9	27.0	+3.1
Upper Mississippi valley	38.3	40.1	+1.8
Missouri valley	33.1	35.0	+1.9
Northern slope	29.7	37.1	+7.4
Middle slope	37.0	40.9	+3.9
Southern slope	50.6	51.5	+0.9
Southern plateau	49.2	53.2	+4.0
Northern plateau	49.1	52.6	+3.5
North Pacific coast region	43.9	47.0	+3.1
Middle Pacific coast region	52.8	55.5	+2.7
South Pacific coast region	58.7	60.4	+1.7
Mount Washington, N. H.	16.8	16.8	Normal
Pike's Peak, Colo.	8.1	13.3	+5.2
Salt Lake City, Utah	38.4	42.1	+3.7

On chart iv. the departures are graphically exhibited by lines connecting stations where the departures coincide. From this chart it will be seen that the month of November has been

warmer than the average over nearly the whole country. In the Gulf states, (except along the coast of Texas, south of Indianola) and in southern Florida, the month has been colder than the average; the mean temperature has also been below the normal in southeastern Tennessee and over portions of Virginia, West Virginia, Kentucky, Ohio, and from the upper lakes eastward to the Saint Lawrence valley; slight deficiencies in the mean temperature are also shown over northern New Jersey, northeastern Pennsylvania and the western portions of Connecticut and Massachusetts. The stations reporting the greatest departures below the normal temperatures are as follows: Mobile, Alabama, 3° 0; New York City, 2° 5; Pensacola, Florida, 2° 2; Alpena, Michigan, 2° 1. Along the New England coast, from southern New Jersey to northern Georgia, and over the western districts the mean temperatures have been above the normal, the departures exceeding 5° over portions of Arizona, New Mexico, Colorado and Utah, while in Montana they vary from 5° to 11°. In the table of miscellaneous meteorological data will be found the departures from the normal for the several stations of the Signal Service.

DEVIATIONS FROM MEAN TEMPERATURE.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average temperatures for November, 1884; in the table of miscellaneous meteorological data, and on chart iv. The following notes in connection with this subject are reported by voluntary observers:

Arkansas.—Lead Hill, Boone county: mean temperature, 47° 4, is 0° 4 below the November average for the last three years.

Illinois.—Anna, Union county: mean temperature, 47° 4, is 2° 0 above the November average for the last nine years.

Riley, McHenry county: mean temperature, 32° 8, is 0° 3 below the November average for the last twenty-four years. The mean daily temperature from 1st to 22d, averaged 38° 0; and from 22d to 30th, it averaged 18° 4. The first half of the month was warmer than any corresponding period during the last twenty-four years. The mean temperature for the autumn of 1884, is 49° 8, or 3° 1 higher than the mean for the last twenty-three years; only the autumns of 1865, 1867, 1870, and 1882, were warmer, and up to November 22d, 1884, the autumn was the warmest for the above period, but the low temperatures after that date materially reduced the mean for the season.

Mattoon, Coles county: mean temperature, 42° 0, is about 3° above the November average for the last four years.

Sycamore, DeKalb county: mean temperature, 32° 8, is 5° 2 below the November average for the last three years.

Indiana.—Vevay, Switzerland county: mean temperature, 45° 1, is 1° 4 above the November average for the last nine years.

Wabash, Wabash county: mean temperature, 38° 1, is 4° 6 above the November average for the last nine years.

Kansas.—Independence, Montgomery county: mean temperature, 45° 6, is 2° 0 above the November average for the last thirteen years.

Lawrence, Douglas county: mean temperature, 41° 5, is 2° 1 above the November average for the last seventeen years.

Yates Centre, Woodson county: mean temperature, 39° 5, is 2° 3 above the November average for the last four years. The mean temperature for the autumn of 1884, exceeds by 6° 2, the autumn average for the last four years.

Emporia, Lyon county: mean temperature, 43° 3, is 3° 4 above the November average for the last five years.

Maine.—Gardiner, Kennebec county: mean temperature, 36° 0, is 0° 4 above the November average for the last forty-eight years.

Maryland.—Fallston, Harford county: mean temperature, 42° 9, is 0° 8 above the November average for the last fourteen years; the highest November mean for that period, 46° 7, occurred in 1870; the lowest, 38° 5, occurred in 1880.

Table of comparative minimum temperatures for the month of November.

State or Territory.	Minimum for November, 1884, Signal Service.		Minimum since Signal-Service stations were opened—3 to 13 years.			Lowest from any other source.			
	Station.	Tempera- ture.	Station.	Tempera- ture.	Year.	Place.	Tempera- ture.	Year.	Length of record.
Alabama	Montgomery	0	Mobile	0		Huntsville	0		Years.
Do	Mobile	32	Montgomery	27	1881	Mount Vernon Arsenal	13		9
Arizona	Prescott	34	Prescott	24.6	1881	Whipple Barracks	24		31
Do	Fort Apache	16	Fort Apache	9	1880	Fort Canby (old)	1		9
Arkansas	Little Rock	17	Little Rock	10	1880	Fort Smith	0		12
Do	Fort Smith	28	Fort Smith	22	1882	Washington (near)	5		21
California	Los Angeles	22	Campo	16	1881	Fort Bidwell	15		27
Do	Red Bluff	39	Red Bluff	26	1880	Fort Crook	9		10
Colorado	Pike's Peak	36	Pike's Peak	38	1880	Fort Garland	10		11
Do	Denver	4	Denver	13	1877	Pagosa Springs	35		30
Connecticut	New Haven	13	New Haven	2	1875	New Haven	38	1880	3
Do	New London	18	New London	4	1875	Fort Trumbull	11		87
Dakota	Fort Totten	23	Pembina	4	1875	Fort Buford	37	1875	47
Do	Fort Yates	22	Bismarck	28	1875	Fort Pembina	39	1875	16
Delaware	Delaware Breakwater	21	Delaware Breakwater	23	1880	Fort Delaware	40		44
District of Columbia	Washington City	28	Washington City	12.5	1880	Washington City	12		49
Florida	Cedar Keys	42	Saint Marks	27	1877	Fort Barrancas	19		59
Do	Pensacola	40	Pensacola	28.1	1881	Fort King	28		10
Georgia	Atlanta	30	Atlanta	20	1881, 1883	Atlanta	10		7
Do	Augusta	34	Augusta	24	1873	Augusta Arsenal	11		48
Idaho	Coeur d'Alene	20	Boise City	14	1882	Fort Hall	12		4
Do	Boise City	24	Boise City	7	1880	Fort Lapwai	0		10
Illinois	Chicago	5	Chicago	2	1872	Augusta	12		10
Do	Springfield	14	Springfield	6	1880	Rock Island Arsenal	7		8
Indiana	Indianapolis	12	Indianapolis	5	1880	Spiceland	14	1880	18
Do	Greencastle	10				Logansport	14	1880	
Indian Territory	Cantonment	18	Fort Gibson	10	1880	Fort Gibson	0		52
Do			Fort Sill	4	1880	Fort Sill	8		4
Iowa	Dubuque	1	Dubuque	9	1875	Independence	17	1875	18
Do	Davenport	5	Davenport	3	1875	Nora Springs	16	1875	
Kansas	Dodge City	12	Dodge City	7	1880	Fort Leavenworth	14		51
Do	Leavenworth	10	Leavenworth	3	1875	Fort Scott	10		10
Kentucky	Louisville	19	Louisville	8	1880	Newport Barracks	4		30
Do						Bowling Green	6	1880	
Louisiana	Shreveport	31	Shreveport	18	1880	Fort Jesup	17		23
Do	New Orleans	42	New Orleans	31.5	1881	New Orleans	29		51
Maine	Eastport	16	Eastport	13	1875	Orono	16	1875	13
Do	Portland	23	Portland	6	1875	Surry	13	1875	
Maryland	Baltimore	26	Baltimore	15	1880	Emmitsburg	7	1880	12
Do	Ocean City	24				Cumberland	8	1880	
Massachusetts	Boston	22	Boston	2	1875	Williamstown	5.5	1875	67
Do	Thatcher's Island	21	Springfield	0.5	1875	Florida	14	1875	4
Michigan	Escanaba	5	Escanaba	9	1880	Fort Brady	17	1875	59
Do	Marquette	6	Marquette	9	1875	Marquette	4		9
Minnesota	Duluth	17	Duluth	29	1875	Fort Ripley	30		17
Do	Saint Paul	6	Saint Paul	24.5	1875	Fort Riley	27	1875	
Mississippi	Vicksburg	32	Vicksburg	23	1877, 1880	Columbus	22		10
Do						Natchez	22		9
Missouri	Saint Louis	13	Saint Louis	8	1880	North Springfield	9	1880	
Do						Saint Louis	1		38
Montana	Fort Benton	8	Fort Benton	31	1875	Camp Baker	42		9
Do	Fort Shaw	4	Fort Shaw	26.5	1880	Fort Benton	30		15
Nebraska	Omaha	2	Omaha	6	1875	Camp Sheridan	17	1880	6
Do	North Platte	4	North Platte	10	1877	Sydney Barracks	16	1875	
Nevada	Winnemucca	9	Winnemucca	9	1880	Camp Halleck	12		11
New Hampshire	Mount Washington	8.9	Mount Washington	10	1875	Dartmouth College	9		18
New Jersey	Sandy Hook	22	Sandy Hook	6	1880	Somerville	4	1880	
Do	Barnegat City	25	Barnegat City	11	1875	North Germantown	6	1875	2
New Mexico	Fort Stanton	20	Santa Fe	11	1880	Fort Union	15	1888	31
Do	Fort Craig	23	Fort Craig	8	1877	Fort Wingate	13	1880	22
New York	Albany	20	Albany	10	1875	Gouverneur	17		40
Do	Oswego	18	Oswego	1	1875	Canton	20	1875	2
North Carolina	Charlotte	29	Charlotte	18	1880	Fort Johnson	9		54
Do	Kitty Hawk	35	Kitty Hawk	22	1879	Ellsworth	10	1880	
Ohio	Columbus	15	Columbus	5	1880	College Hill	2		68
Do	Cleveland	12	Cleveland	0	1880	Westerville	13	1880	10
Oregon	Roseburg	30	Roseburg	17.5	1880	Camp Harney	4		12
Do	Portland	34	Portland	22.5	1880	Fort Dalles	4		16
Pennsylvania	Pittsburg	19	Pittsburg	4	1880	Franklin	8	1880	8
Do	Erie	16	Erie	6	1880	Philadelphia	12		113
Rhode Island	Narragansett Pier	19	Newport	4	1875	Fort Adams	3	1875	41
Do	Block Island	27	New Shoreham	19	1880				
South Carolina	Charleston	40	Charleston	28	1873, 1881	Aiken	23	1880	8
Do						Charleston	28		105
Tennessee	Knoxville	25	Knoxville	15	1873, 1881	Clarksville	3	1880	8
Do	Nashville	27	Nashville	13	1872	Humboldt	9		4
Texas	Fort Elliott	20	Fort Elliott	5	1880	Fort Elliott	8	1880	3
Do	Fort Davis	27	Fort Davis	6	1880	Fort Richardson	8		6
Utah	Salt Lake City	26	Salt Lake City	3	1880	Coalville	18	1880	9
Vermont	Burlington	10	Burlington	10	1875	Newport	18	1875	
Virginia	Lynchburg	27	Lynchburg	13	1880	Fortress Monroe	15	1880	56
Do	Norfolk	36	Norfolk	21	1879	Mount Solon	9	1880	
Washington Territory	Spokane Falls	18	Spokane Falls	3	1881	Fort Colville	8		20
Do	Olympia	35	Olympia	21	1882				
West Virginia	Morgantown	8	Morgantown	8	1880	Helvetia	0	1880	4
Wisconsin	Milwaukee	4	Milwaukee	14	1875	Neillsville	26	1880	8
Do	La Crosse	4	La Crosse	21	1875	Fort Crawford	13		25
Wyoming	Cheyenne	2	Cheyenne	20	1875	Fort Bridger	40	1880	24

Massachusetts.—Worcester, Worcester county: mean temperature, 39°.1, is slightly below the November average. The highest November average during the last forty-four years, 46°.9, occurred in 1849; the lowest, 30°.4, occurred in 1873.

New Hampshire.—Contoocook, Merrimac county: mean temperature, 36°.8, is about 3° above the normal for the month.

New Jersey.—Moorestown, Burlington county: mean temperature for the autumn of 1884, 55°.2, is 1°.8 above the autumn average for the last twelve years.

New York.—Palermo, Oswego county: mean temperature, 33°.4, is 1°.8 below the November average for the last thirty-one years.

North Volney, Oswego county: mean temperature, 35° 9, is 0° 4 above the November average for the last seventeen years. The mean autumn temperature, 50° 6, is 2° 2 above the autumn average for the same period; the highest autumn mean, 52° 5, occurred in 1881; the lowest, 44° 0, occurred in 1875.

Ohio.—Wauseon, Fulton county: mean temperature, 35° 5, is 0° 2 above the November average for the last fourteen years.

Pennsylvania.—Dyberry, Wayne county: mean temperature, 35° 2, is 0° 9 above the November average for the last seventeen years.

Vermont.—Woodstock, Windsor county: mean temperature, 32° 7, is 1° 7 above the November average for the last seventeen years; the highest November mean for that period, 36° 6, occurred in 1877; the lowest 22° 5, occurred in 1873.

Virginia.—Variety Mills, Nelson county: mean temperature, 42° 4, is 2° below the November average for the last seven years.

Wytheville, Wythe county: mean temperature, 42° 7, is 1° 0 above the November average for the last twenty years.

West Virginia.—Helvetia, Randolph county: mean temperature, 40° 1, is 0° 7 below the November average for the last eight years.

MONTHLY RANGES OF TEMPERATURE.

The monthly ranges of temperature were greatest in northern Dakota, and least along the immediate coast of the Pacific and in southern Florida; they exceeded 70° over the northern portion of the country from the upper lake region to western Montana. The smallest ranges are: 13° 6 at Key West, Florida; 18° 5 at Fort Canby, Washington Territory, and 20° at San Francisco, California. The greatest ranges are: 92° 8 at Fort Yates, 84° at Fort Totten, 80° 8 at Fort Bennett, and 80° at Huron, all of these stations being in Dakota. In the table of miscellaneous meteorological data will be found the monthly, and greatest and least daily ranges at the various stations.

The observer at Red Bluff, California, reports the following: "during the afternoon of the 26th, there came, in puffs, winds from the north, as hot as though heated by an extensive fire, causing the temperature to rise from 36° to 79°—a range of 43°."

LOW TEMPERATURES.

Fort Yates, Dakota: very cold weather prevailed on the 23d; at 7 a. m. the temperature was —7° 5, and at sunset it was —21° 3.

Fort Totten, Dakota: the 23d was a very cold day, the temperature falling to —22° 2.

Dubuque, Iowa: the minimum temperature on the morning of the 24th was —1° 2.

Moorhead, Minnesota: the weather on the 23d was very cold; the temperature was below zero all day, the minimum being —15°.

Columbus, Ohio: on the morning of the 24th, the minimum temperature was 15° 3, having fallen 40° during the 24 hours preceding.

FROSTS.

Frosts occurred in the various districts on the following dates:

New England.—1st, 2d, 3d, 5th to 30th.

Frost was also reported at Mount Washington on the following dates: 1st to 8th, 11th to 14th, 16th to 30th.

Middle Atlantic states.—3d, 5th to 22d, 24th to 27th, 29th, 30th.

South Atlantic states.—1st, 2d, 3d, 5th to 17th, 20th, 21st, 22d, 24th, 25th, 27th, 29th, 30th.

Florida.—Newport, 16th, 17th, 25th; Archer, 17th, 18th, 25th; Limona, Jacksonville, and Cedar Keys, 25th.

Eastern Gulf states.—5th to 12th, 15th, 16th, 20th, 21st, 24th, 25th, 27th, 29th.

Western Gulf states.—5th to 11th, 14th, 15th, 18th to 30th.

Tennessee.—2d, 5th to 17th, 20th, 21st, 22d, 24th to 30th.

Ohio valley.—1st, 3d, 5th to 16th, 18th to 22d, 24th to 30th.

Lower lake region.—2d, 3d, 6th to 10th, 13th to 17th, 19th to 22d.

Upper lake region.—1st to 30th.

Extreme northwest.—1st to 21st, 23d, 25th, 26th, 28th, 29th.

Upper Mississippi valley.—2d to 21st, 23d to 30th.

Missouri valley.—1st to 30th.

Northern slope.—1st to 30th.

Middle slope.—1st to 30th.

Southern slope.—6th, 9th, 13th, 19th to 24th, 26th, 29th.

Southern plateau.—4th, 5th, 7th, 9th to 30th.

Middle plateau.—1st to 30th.

Northern plateau.—1st, 2d, 3d, 5th to 14th, 16th to 30th.

North Pacific coast region.—1st, 5th, 18th to 30th.

Middle Pacific coast region.—Sacramento, California, 17th to 30th; Red Bluff, California, 17th to 21st, 22d, 26th; Princeton, California, 21st, 30th; Oakland, California, 25th, 27th to 30th; Hydesville, California, 25th, 27th to 30th; Blue Lake, California, 17th to 26th, 28th, 29th, 30th.

South Pacific coast region.—Poway, California, 19th, 22d to 26th.

ICE.

Ice formed in the southern parts of the country as follows:

Arizona.—Wickenburg, 19th, 20th.

Arkansas.—Fort Smith, 20th; Mount Ida, 4th, 5th, 7th to 10th, 20th, 24th, 25th, 26th; Lead Hill, 6th, 7th, 20th, 21st, 23d to 27th.

California.—Princeton, 21st.

Delaware.—Delaware Breakwater, 6th, 25th.

Georgia.—Athens, 6th to 10th, 25th.

Louisiana.—Shreveport, 24th; Liberty Hill, 20th.

Maryland.—Baltimore, 7th.

New Jersey.—Atlantic City and Sandy Hook, 7th.

North Carolina.—Charlotte, 6th, 7th; New River Inlet, 7th, 25th; Weldon, 7th; Flat Rock, 6th to 11th, 16th.

Ohio.—Cincinnati, 24th.

Tennessee.—Chattanooga, 6th, 7th, 8th, 25th.

Texas.—Fort Elliott, 18th—first ice of season; Clarksville, 23d.

Virginia.—Dale Enterprise, 7th.

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada, for the month of November, 1884, as determined by the reports from more than seven hundred stations, is exhibited on chart iii.

The precipitation for November, 1884, has been less than the average over nearly the entire country. The largest deficiencies have occurred on the Pacific coast and over the region extending from the Gulf of Mexico northward to British America. In Tennessee the precipitation was but little more than one-third of the average; in the Ohio valley and east Gulf states it was less than one-half; in the upper Mississippi valley, a little more than one-half; in the lake region, about two-thirds, and in the west Gulf states about three-fourths. While the deficiencies in these districts generally, have been marked, there are a few localities where the precipitation has been excessive, viz: at Brownsville, Texas, the excess over the average was 1.04; at Shreveport, Louisiana, 0.86; at Pensacola, Florida, 0.78; and at Marquette, Michigan, 0.47. On the north Pacific coast where the average precipitation for November, for a series of years has been 6.11; this year it was 1.80, or less than one-third of the average; in the middle Pacific coast region the average for November in previous years has been 2.18, and for the present year it was but 0.10. Out of the reports from one hundred and nineteen stations in California, along the lines of the Central Pacific and Southern Pacific railroads, seventy-four report the entire absence of rain during the month, and the remaining stations report rainfalls averaging about 0.30. On the Atlantic coast the monthly precipitation was excessive over portions of Maine, Delaware, Maryland, Virginia, North Carolina, and Florida; on the sum-